

RANMPX Ranger Port Expander



Rauland-Borg Corporation

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General Information

Installation Notes



The RANMPX Ranger Port Extender (Version 2.1) allows the Ranger Media Management System's Control Link to be easily distributed throughout multiple locations campus-wide. It provides 10 pseudo-RS485 control links as well as RS232 and TTL IN and OUT connections. The unit should be mounted in a standard 19" equipment rack.

Alerts, Precautions, and Limitations



- ✓ that a RANCPU be mounted in the 1st RANMPX. Additional RANMPXs can be added either locally or remotely, but these do **not** (and **can not**) use additional RANCPUs.
- ✓ Do not exceed total cumulative wire length between the Headend rack and classroom panels.
- ✓ Do not exceed 50,000pf of capacitance when grouping classrooms.

Tools and Supplies



Installing the unit requires the following hand tools:

- ✓ Phillips screwdriver
- ✓ Small flat blade screwdriver

Packing List



The *RANMPX Ranger Port Extender* is packaged one to a carton. Each carton should contain the following:

Quantity	Part	Part Number
1	Port Expander	RANMPX
4	#10-32x3/4" Pan Hd, Phillips Mounting Screws	B0439
4	#10 Mounting Washers	WL0315

Related Documents



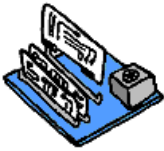
Other related information can be found in the following Ranger® System manuals:

- ✓ KI-1856C Ranger Headend

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Installation

Hardware Configuration



Prior to installation, you must confirm the setting of three internal three-pin terminal block header jumpers (J14, J15 and J16) for proper switching between fiber optic transceivers and RS232 modems. By default, these jumpers are set to T, the fiber optic setting. Change these as necessary to R if using RS-232 data modems.

Also, observe the following configuration procedure on the first RANMPX:

1. Cut power from the RANMPX.
2. Remove cover.
3. Set DIP switches on RANCPU card to “All On.”
4. Install the RANCPU card in the RANMPX card slot.
5. Reinstall the RANMPX cover.

➤ *Connect subsequent RANMPXs using the rear panel RS232 IN/OUT connectors—these do not require a RANCPU board.*

Electrical Installation



The following sections present all standard and optional wiring information:

dedicated fiber or copper via modem, etc. The data rate is 19.2 KB. The data structure does not follow conventional asynchronous formats, however, such as those used by PCs.

The **RS232 OUT** originates with the RANMPX that contains the RANCPU. This is connected to the **RS232 IN** connector on the 2nd RANMPX. Then the 2nd RANMPX **RS232 OUT** connector can be connected to a 3rd RANMPX's **RS232 IN** connector. At this time it is not known how many layers of this sort this system will support. The pinout of these female DB-9connectors is as follows:

Pin Number	RS232 OUT	RS232 IN	Comments
1	LED (out)	LED (in)	Makes CPU ACTIVE LED on front flash. Optional
2	RxD (in)	TxD (out)	Required if using RS232 interface
3	TxD (out)	RxD (in)	Required if using RS232 interface
4	DTR (out)	DTR (in)	Required if using RS232 interface
5	GND	GND	Required
The following additions appear with production runs after July, 1997			
7	TTL-DTR(out)	TTL-DTR(in)	Required if using RANFIBER
8	TTL-RxD(in)	TTL-RxD(out)	Required if using RANFIBER
9	TTL-TxD(out)	TTL-TxD(in)	Required if using RANFIBER

If units are in the same rack, they are connected via a one-to-one connection scheme: Pin 1 to Pin 1, Pin 2 to Pin 2, etc.,. If units are more than 50 feet apart, they make connection via Pins 1-5 and appropriate R232 modem pins. **Contact Rauland-Borg for information on acceptable data transceivers and modems.**

The pinout of standard DB9 and DB25 connectors used in these devices is as follows:

Connections-R232 External Data Transceivers

RS-232C (9 Pin Connector)		RS-232C (25 Pin Connector)	
Pin Number	Signal Description	Pin Number	Signal Description
1	Carrier Detect (CD)	1	Frame Ground (GND)
2	Receive Data (RD)	2	Transmit Data (TD)
3	Transmit Data (TD)	3	Receive Data (RD)
4	Data Terminal Ready (DTR)	4	Request To Send (RTS)
5	Signal Ground (GND)	5	Clear To Send (CTS)
6	Data Set Ready (DSR)	6	Data Set Ready (DSR)
7	Request To Send (RTS)	7	Signal Ground (GND)
8	Clear To Send (CTS)	8	Carrier Detect (CD)
9	Ring Indicator (RI)	9	+ Transmit Current Loop Return
		11	- Transmit Current Loop Data
		18	+ Receive Current Loop Data
		20	Data Terminal Ready (DTR)
		22	Ring Indicator (RI)
		25	- Receive Current Loop Return

9 Pin to 25 Pin RS232C Conversion

9 Pin Number	25 Pin Number	Signal Description
1	8	Carrier Detect (CD)
2	3	Receive Data (RD)
3	2	Transmit Data (TD)
4	20	Data Terminal Ready (DTR)
5	7	Signal Ground (GND)
6	6	Data Set Ready (DSR)
7	4	Request To Send (RTS)
8	5	Clear To Send (CTS)
9	22	Ring Indicator (RI)

Mechanical Installation



The RANMPX mounts in a single rack space in a standard 19" rack using the 4 mounting screws and washers supplied.

Software Configuration and Testing



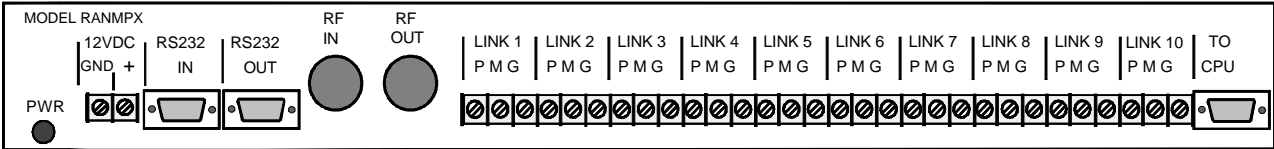
The unit must be programmed to operate correctly. For more information regarding software configuration, see KI-1856C, the *Ranger Headend* manual

After configuration, test the unit by starting the Ranger Media Center software. If the “Link OK” message is displayed in the lower right corner of the Media Center screen, and you can control the system resources from the classroom, the system is functioning correctly.

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Operations

Rear Panel Connectors

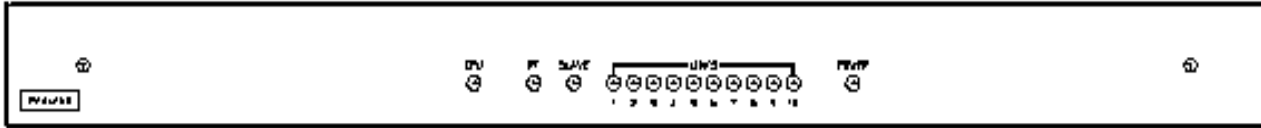


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Rear panel connector functions are as follows:

Connector	Function	Connector Type and Connections
12 VDC	Power Supply Input	Screw terminals (2); Connects to 12 VDC Power Supply. Observe proper polarity
RS232 IN	RS232Rx	DB9 connector (female); Connects to modem (fiber or copper) for daisy chaining hardware. Do not make any connections to RANMPX units containing RANCPU cards.
RS232 OUT	RS232Tx	DB connector (female); connects to modem (fiber or copper) for daisy chaining hardware.
RF IN		Not Used
RF OUT		Not Used
Link 1	Pseudo RS485 Links	Screw terminals (3); connects to field wiring except for RANMPX units containing RANCPU cards. For RANMPX units containing RANCPU cards connect to the RANCC16 AX LINK.)
Link 2-10		Screw terminals (3 per link); connects to field wiring
TO CPU	Ranger Control System Maintenance.	DB9 Connector (female). Connects to RANPCSW-COM 1.port

Front Panel LEDs



Operational states are confirmed by front panel LEDs in the following manner:

LED	Operational State
CPU	CPU operation is confirmed by the Green LED <i>Flashing</i> in .5 second on/.5 second off intervals. Other flashing intervals suggest there may be a problem with the RS232, RF or LINK outputs. <i>Steady On</i> may mean that the RANCPU has not been downloaded with a program yet; this is OK. Unless there is a LINK problem, the LED should begin flashing after the control program has been successfully downloaded .
RF	RF data input is confirmed by a <i>Steady On</i> LED. This LED should remain <i>Off</i> unless the optional RF section is added. Consult Rauland Technical Support if the LED remains <i>On</i> at all times.
SLAVE	RS232 OUT/IN data is confirmed by a <i>Steady On</i> LED. Consult Rauland Technical Support if the LED remains <i>On</i> at all times. (If it does remain <i>On</i> at all times, you can isolate the difficulty by removing the RS232 OUT connector and/or the RS232 IN connector.)
LINKS 1-10	Received Link data is confirmed by a <i>Steady On</i> LED (associated pseudo-RS485 Link). Consult Rauland Technical Support if the LED remains <i>On</i> at all times. (If it does remain <i>On</i> at all times, you can isolate the difficulty by removing the appropriate field wiring.)
POWER	Power on is confirmed by <i>Steady On</i> LED.